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EXAMINER

MISLEH, JUSTIN P

ART UNIT PAPER NUMBER

2612

DATE MAILED: 09/02/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/500,988

Applicant(s)

SHIBAZAKI, KIYOSHIGE

Examiner

Justin P Misleh

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1 - 11 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1 - 11 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 15 February 2000 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). ____. |
| 2) <input checked="" type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) <u>5</u> . | 6) <input type="checkbox"/> Other: |

DETAILED ACTION

Specification

1. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

Claim Objections

2. Claims 6 and 7 are objected to because of the following informalities: no support for these claims in the disclosure.

The Examiner believes claims 5 – 7 are directed towards the embodiment of the present invention comprising, however, not limited to, figure 9. With respect to figure 9 and the claim language, claim 5 requires an electronic camera comprising an image-capturing device and a control device that performs a specific type of image processing (supported on page 13, lines 9 and 10) wherein the image-capturing device comprises a plurality of photoelectric conversion elements, a charge transfer circuit, an amplifier, and an amplifier power control circuit controlling the amplifier in conformance with an outside control signal. However, claims 6 and 7 broadly require that the control device (which together with the image-capturing device comprises the electronic camera, as required by claim 5) control the image-capturing device so that appropriate bias currents are supplied to the amplifier in conformance with the control signal. The claim language of claims 6 and 7 indicate that the control device (or rather controller 43 when applied to figure 9) is responsible for controlling the amplifier control circuit and, likewise, the control signal, however, there is no written support or suggestion within the

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disclosure as to the relationship between the control device, the amplifier control circuit, and the control signal. The origin of the control signal is undisclosed by the Applicant. For the purposes of examination, the Examiner will interpret the control device as controlling the image-capturing device while the control signal is solely responsible for supplying the appropriate bias currents to the amplifier by means of the amplifier control circuit.

Appropriate correction is required.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. **Claims 8 – 11** are rejected under 35 U.S.C. 102(e) as being anticipated by Wacyk. For the following rejections, please refer to figure 2 and columns 3 (lines 31 – 54), 4 (lines 13 – 26), and 6 (lines 25 – 46).

5. For **claim 8**, Wacyk discloses an image-capturing device (sensor 30) comprising:

a plurality of photoelectric conversion elements (31); and

a heat generating component that constitutes a local heat source (A/D converter 34 and

Digital Signal Processor 35), wherein:

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said plurality of photoelectric conversion elements (31) and said heat generating component (34 and 35) are provided on a single semiconductor substrate (see column 2, lines 48 – 59); and

said image-capturing device further comprises a heat generating component power control circuit (Power Source 37) that controls power to said heat generating component in conformance to a control signal (“free power”, see below for explanation) provided from outside.

Wacyk discloses a local power supply (37), which provides power to the local single substrate components: the plurality of photoelectric conversion elements (31) and the heat generating component (34 and 35). Therefore, the local power supply is the heat generating component power control circuit that controls power to the said heat generating component. Wacyk discloses, as stated in column 6 (lines 25 – 46), that the heat generating component power control circuit (local power supply 37) provides power to the said heat generating component by acquiring electromagnetic radiation, i.e. “free power”, which emanates from ambient energy sources. The ambient energy sources may be ambient light or RF energy. Therefore, the heat generating component power control circuit (local power supply 37) provides power to the said heat generating component in conformance to a control signal provided from outside wherein the control signal is simply the acquired outside “free power”.

6. As for **claim 9**, Wacyk discloses, an image-capturing device according to claim 8, wherein:

said plurality of photoelectric conversion elements are two-dimensionally arrayed on said semiconductor substrate (clearly shown in figure 2).

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7. As for **claim 10**, Wacyk discloses, an image-capturing device according to claim 8, wherein:

said heat generating component is an A/D converter (34; please see figure 2).

8. As for **claim 11**, Wacyk discloses, an image-capturing device according to claim 8, wherein:

said heat generating component is a signal processor (35; please see figure 2).

Claim Rejections - 35 USC § 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. **Claims 1 – 7** are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant's conceded prior art in view of Kothari et al.

11. For **claim 1**, the Applicant discloses, as the conceded prior art, as shown in figures 5 – 7 and as stated on pages 1 – 3, an image-capturing device (see figure 5) comprising:

a plurality of photoelectric conversion elements (1) that are two-dimensionally arrayed;

a charge transfer circuit (2 and 3) that transfers electrical charges from said photoelectric conversion elements;

and an amplifier (4) that is connected to an end of said charge transfer circuit along a direction of charge transfer, converts an electrical charge into voltage (floating diffusion amplifier; see page 2, lines 14 – 19), and amplifies the voltage, wherein:

at least said photoelectric conversion elements (1), said charge transfer circuit (2 and 3) and said amplifier (4) are provided on a single semiconductor substrate.

However, the Applicant does not disclose in the conceded prior art the said image-capturing device further comprises an amplifier power control circuit that controls power to said amplifier in conformance to a control signal provided from outside.

Kothari et al. also disclose, as shown in figures 1 – 3 and as stated in columns 2 (lines 59 – 67), 3 (lines 1 – 25 and 42 – 59), 5 (lines 8 – 67), and 6 (lines 1 – 47), an image-capturing device (10) comprising a plurality of photoelectric conversion elements (14), a charge transfer circuit (20), and an amplifier (33). Kothari et al. also disclose the image-capturing device (10) further comprising an amplifier power control circuit (provided by areas 50, 52, 54, and 56) that controls power (see column 5, lines 47 – 52) to said amplifier in conformance to a control signal (\emptyset PIX and \emptyset NPIX) provided from outside (the controls signal are provided from the shift register and logic circuitry 24, which is outside the amplifier). As stated in column 1 (lines 38 – 48), at the time the invention was made, one with ordinary skill in the art would have been motivated to modify the Applicant's conceded prior art according to the teachings of Kothari et al. as a means to lower the total power requirements of the single semiconductor substrate. Therefore, at the time the invention was made, it would have been obvious to one with ordinary skill in the art to modify the Applicant's conceded prior art according to the teachings of Kothari et al.

12. As for **claim 2**, Applicant's conceded prior art in view of Kothari et al. disclose, an image-capturing device according to claim 1, wherein: said amplifier power control circuit (provided by areas 50, 52, 54, and 56) changes a bias current supplied to said amplifier by using

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said control signal (see column 5, lines 12 – 15, and column 6, lines 6 – 21). The control signal (ϕ_{PIX} and ϕ_{NPIX}) controls the amplifier power control circuit to change the bias current (V_{bias}) supplied to the amplifier.

13. As for **claim 3**, Applicant's conceded prior art disclose, as stated on page 1 (line 23), an image-capturing device according to claim 1, wherein: said charge transfers the electrical charges to said amplifier by employing a CCD (charge-coupled device).

14. As for **claim 4**, Applicant's conceded prior art disclose an image-capturing device according to claim 1, wherein: said charge transfers the electrical charges to said amplifier by employing a CCD (charge-coupled device). However, the Applicant's conceded prior art do not disclose wherein the said charge transfer circuit reads the electrical charges out to said amplifier through XY address scanning. Kothari et al. disclose, as taught above, an image-capturing device comprising a plurality of photoelectric conversion elements (14) wherein a charge transfer circuit (20) and an amplifier (33) are associated with each photoelectric conversion element. Kothari et al. also disclose an amplifier control circuit that controls power the amplifier in conformance to a control signal. Kothari et al. teach a one-dimensional array of photoelectric conversion elements, however, as stated in column 3 (lines 4 – 10), the one-dimensional may also be a two-dimensional array of MOS type photosites (photoelectric conversion elements). It is inherent to MOS type photosites, arranged in a two-dimensional array, to access the electrical charges through XY address scanning. Therefore, Applicant's conceded prior art in view of Kothari et al. teach an image-capturing device according to claim 1 wherein: wherein the said charge transfer circuit reads the electrical charges out to said amplifier through XY address scanning.

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15. For **claim 5** (please see objections above), as stated in the MPEP § 2111.02 (please see also *Kropa v. Robie*, 187 F.2d 150, 152, 88 USPQ 478, 481 – CCPA 1951), the preamble of the claim neither recites the limitations of the claim nor is the preamble necessary to give life, meaning, and vitality to the claim, therefore, the preamble is not served to further define the structure of the claim.

The Applicant discloses, as the conceded prior art, as shown in figures 5 – 7 and as stated on pages 1 – 3, an image-capturing device (see figure 5) that captures an image of a subject and outputs image data, wherein said image-capturing device comprises:

a plurality of photoelectric conversion elements (1) that are two-dimensionally arrayed;
a charge transfer circuit (2 and 3) that transfers electrical charges from said photoelectric conversion elements;

and an amplifier (4) that is connected to an end of said charge transfer circuit along a direction of charge transfer, converts an electrical charge into voltage (floating diffusion amplifier; see page 2, lines 14 – 19), and amplifies the voltage, wherein:

at least said photoelectric conversion elements (1), said charge transfer circuit (2 and 3) and said amplifier (4) are provided on a single semiconductor substrate.

However, the Applicant does not disclose in the conceded prior art the said image-capturing device further comprising an amplifier power control circuit that controls power to said amplifier in conformance to a control signal provided from outside and a control device that performs a specific type of image processing on the image data.

In regards to the control device, Official Notice that both the concepts and advantages of providing a control device that performs a specific type of image processing on the image data

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are well known and expected in the art. It would have been obvious to one with ordinary skill in the art to have provided a control device that performs a specific type of image processing on the image data with the image-capturing device that outputs image data as taught in the Applicant's conceded prior art as means to provide processed image data ready for display, transmission, and/or storage.

In regards to the amplifier power control circuit, Kothari et al. also disclose, as shown in figures 1 – 3 and as stated in columns 2 (lines 59 – 67), 3 (lines 1 – 25 and 42 – 59), 5 (lines 8 – 67), and 6 (lines 1 – 47), an image-capturing device (10) comprising a plurality of photoelectric conversion elements (14), a charge transfer circuit (20), and an amplifier (33). Kothari et al. also disclose the image-capturing device (10) further comprising an amplifier power control circuit (provided by areas 50, 52, 54, and 56) that controls power (see column 5, lines 47 – 52) to said amplifier in conformance to a control signal (ϕ PIX and ϕ NPIX) provided from outside (the controls signal are provided from the shift register and logic circuitry 24, which is outside the amplifier). As stated in column 1 (lines 38 – 48), at the time the invention was made, one with ordinary skill in the art would have been motivated to modify the Applicant's conceded prior art according to the teachings of Kothari et al. as a means to lower the total power requirements of the single semiconductor substrate. Therefore, at the time the invention was made, it would have been obvious to one with ordinary skill in the art to modify the Applicant's conceded prior art according to the teachings of Kothari et al.

16. As for **claim 6** (please see objection above), Kothari et al. disclose, an electronic camera according to claim 5 (please see claim 5 above), wherein: said control device controls said image-capturing device so that a normal bias current is supplied to said amplifier in conformance

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to said control signal when discharging unnecessary electrical charges and reading out electrical charges from said photoelectric conversion elements, and the bias current to said amplifier is reduced in conformance to said control signal at other times.

Kothari et al. teach, as stated in columns 5 (lines 8 – 67) and 6 (lines 1 – 47), that the amplifier power control circuit (provided by areas 50, 52, 54, and 56) changes a bias current supplied to said amplifier by using said control signal. The control signal (ϕ_{PIX} and ϕ_{NPIX}) controls the amplifier power control circuit to change the bias current (V_{bias}) supplied to the amplifier. The amplifier power control circuit powers up the amplifier during the reading out of electrical charges from said photoelectric conversion elements by and the amplifier is powered down at all other times. The amplifier power control circuit powers up the amplifier by applying an $\phi_{PIX}=0$ and $\phi_{NPIX}=1$ control signal so that a normal bias current is supplied to the amplifier (as shown in figure 2). The amplifier power control circuit powers down the amplifier by applying an $\phi_{PIX}=1$ and $\phi_{NPIX}=0$ control signal so that a reduced bias current ($V_{bias}=0$) is supplied to the amplifier. Kothari et al. teach discharging unnecessary electrical charges from the photoelectric conversion elements and reading out electrical charges from the photoelectric conversion elements, since, discharging unnecessary electrical charges from the photoelectric conversion elements and reading out electrical charges from the photoelectric conversion elements are both a process of reading out electrical charges (regardless of whether unnecessary or necessary) from the photoelectric conversion elements.

17. As for **claim 7** (please see objection above), Applicant's conceded prior art in view of Kothari et al. disclose, an electronic camera according to claim 6 (please see claim 5 above), wherein: said control device controls said image-capturing device so that the normal bias current

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is supplied to said amplifier in conformance to said control signal when exposure is performed over a length of time equal to or less than a specific length of time.

It is inherent to the Applicant's conceded prior art image-capturing device to provide an exposure means to the plurality of photoelectric conversion elements wherein the plurality of photoelectric conversion elements are exposed to the image of a subject for a specific length of time, since, if the plurality of photoelectric conversion elements are over-exposed, saturation of the plurality of photoelectric conversion elements would occur and provide useless image data. Kothari et al. teach that a normal bias current is supplied to the amplifier in conformance to the control signal only during the reading out of electrical charges from the plurality of photoelectric conversion elements. Since, the plurality of photoelectric conversion elements are exposed for a specific length of time and since the electrical charges are read out during times of non-exposure, regardless of whether the exposure time was equal to or less than the specific length of time, electrical charges would still be read out of the plurality of photoelectric conversion elements during times on non-exposure and therefore, a normal bias current would be supplied to the amplifier in conformance with the control signal.


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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Justin P Misleh whose telephone number is 703.305.8090. The examiner can normally be reached on Monday - Friday, 8 am - 5 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wendy R Garber can be reached on 703.305.4929. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Technology Center 2600 Customer Service Office whose telephone number is 703.306.0377.

JPM
August 22, 2003


WENDY R. GARBER
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600